



## WELDING PROCEDURE SPECIFICATION

**WPS -** 2010-1/8      **REV. NO.:** 1      **DATE:** 10/3/2005      **\*\*APPLICABILITY\*\***  
**WELDING PROCESS:** GTAW-      and GTAW-      **ASME:** X      **AWS:** X      **OTHER:**  
**SUPPORTING PQR:** Z-WS-9      P-WS-191-1      P-WS-226

**JOINT:** This WPS shall be used in conjunction with the General Welding Standards (GWS) and Welding Fabrication Procedure (WFP) sections and criteria for joint details, repairs, NDE, inspection etc.

<b>Weld Joint Type:</b> Butt/Fillet	<b>Class:</b>	Full or Partial Penetration
<b>See GWS 1-06 and WFP's for joint details</b>	<b>Preparation:</b>	Thermal/Mechanical
<b>Root Opening:</b> .0 - .125	<b>Backing:</b>	Gas/ring/back welding
<b>Backgrind root:</b> On double sided joints	<b>Backing Mat.:</b>	CS Strap/ring when used
<b>Bkgrd Method:</b> Grind/chip/file	<b>GTAW Flux:</b> N/A	<b>Backing Retainer:</b> N/A

<b>FILLER METALS:</b>		<b>Class:</b>	ER309/310	<b>and</b>	ER309/310
<b>A No:</b> 8	<b>SFA Class:</b> 5.9 and 5.9	<b>F No:</b> 6 and 6	<b>Size:</b> 1/16	3/32	1/8
<b>Insert:</b> N	<b>Insert Desc.:</b> N/A	<b>Weld Metal Thickness Ranges:</b>			
<b>Flux:</b> Type: NA	<b>Size:</b> 0	<b>AWS Root Pass:</b>	0.062	<b>thru</b>	0.125
<b>Filler Metal Note:</b> ER 310 used for buttering the A-333 side of joint		<b>AWS Balance:</b>	0.062	<b>thru</b>	0.750
		<b>ASME Root Pass:</b>	0.062	<b>thru</b>	0.125
		<b>ASME Balance:</b>	0.062	<b>thru</b>	0.750

<b>BASE MATERIAL</b>	<b>P No.</b> 1	<b>Gr No.</b> All	<b>to:</b> P No. 8	<b>Gr No.</b> All
<b>Spec.</b> ≤ .030 C	<b>Grade:</b> All	<b>to:</b> Spec. Stainless Steel	<b>Grade:</b> All	
<b>Qualified Pipe Dia. Range:</b> ≥	<b>AWS:</b> 2.5	<b>ASME:</b> 0.25		
<b>Qualified Thickness Range:</b>	<b>AWS:</b> 0.062	<b>thru</b> 0.750	<b>ASME:</b> 0.062	<b>thru</b> 0.750

**QUALIFIED POSITIONS:**      **AWS:** All      **ASME:** All      **Vert. Prog.:** Up

<b>Preheat Min. Temp.:</b> 50 °F	<b>GAS: Shielding:</b> Argon	<b>or</b>	
<b>Interpass Max. Temp.:</b> 350 °F	<b>Gas Composition:</b> 100 / / %		0 / 0 / 0 %
<b>Preheat Maintenance:</b> 50 °F	<b>Gas Flow Rate cfh:</b> 10 to 25		0 to 0
<b>PWHT: Time @ °F Temp.</b> 0	<b>Backing Gas/Comp:</b> Argon		100 %
<b>Temp. Range:</b> 0 °F	<b>Backing Gas Flow cfh:</b> 3 to 8		
<b>to</b> 0 °F	<b>Trailing Gas/Comp:</b> N/A		0 %

**APPROVAL:**      Signatures on file at ENG      **DATE:** 10/3/2005

**WELDING CHARACTERISTICS:**

**Current:** DCEN and DCEN      **Tungsten Type:** EWTh-2      **Transfer Mode:** N/A  
**Ranges: Amps** 60 to 175      **Tungsten Dia.:** 0.0625      **Pulsing Cycle:** 0 to 0  
**Volts** to      **Background Current:** 0  
**Fuel Gas:** N/A      **Flame:** N/A      **Braze temp. °F** 0 to 0

**WELDING TECHNIQUE:** For fabrication specific requirements such as fittup, cleaning, grinding, PWHT and inspection criteria refer to Volume 2, Welding Fabrication Procedures

**Technique:** Manual      **Cleaning Method:** Wire Brush, File, Grind  
**Single Pass or Multi Pass:** M      **Stringer or Weave bead (S/W):** S/W      **Oscillation:** N  
**GMAW Gun Angle °:** 0 to 0      **Forehand or Backhand for GMAW (F/B):** N/A  
**GMAW/FCAW Tube to work distance:** N/A  
**Maximum K/J Heat Input:** N/A      **Travel speed:** Variable      **Gas Cup Size:** 3 to 6

**PROCEDURE QUALIFIED FOR:**

**Charpy "V" Notch:** Y      **Nil-Ductil Transition Temperature:** N/A      **Dynamic Tear:** N/A

**Comments:**

Weld Layer	Manual Process	Filler Metals	Size	Amp Range	Volt Range	Travel/ipm	Nozzel Angle	Other
1	GTAW-	ER309/310	1/16	60 to 175	to	4 to 8	0 to 0	
2	GTAW-	ER309/310	3/32	60 to 175	to	to		
3	GTAW-	ER309/310	1/8	60 to 175	to	to		
4	GTAW-	ER309/310		to	to	to		
5	GTAW-	ER309/310						
6								

**REM.** \* Weld layers are representative only - actual number of passes and layer sequence may vary due to variations in joint design, thickness and fitup.

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